

534,555

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
3 June 2004 (03.06.2004)

PCT

(10) International Publication Number  
**WO 2004/045988 A1**

(51) International Patent Classification<sup>7</sup>: B65D 90/18,  
19/38, 19/42

(21) International Application Number:  
PCT/AU2003/001355

(22) International Filing Date: 14 October 2003 (14.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
2002952755 18 November 2002 (18.11.2002) AU  
2003901994 28 April 2003 (28.04.2003) AU

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant and

(72) Inventor: BAKER, Maurice [AU/AU]; 14 Forest Lodge Close, Riddels Creek, VIC 3431 (AU).

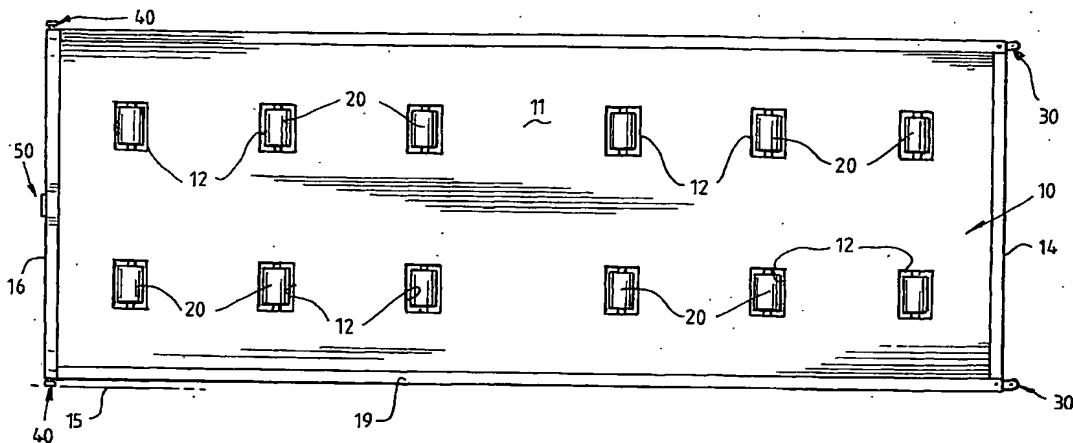
(74) Agent: A TATLOCK & ASSOCIATES; 28 Drummond Street, Carlton South, Victoria 3053 (AU).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MOBILE PALLET WITH VARIOUS LOCKING MEANS



(57) Abstract: A pallet (10) for use within a sea freight container, said pallet having a chassis (19) which is provided with locomotion means such as wheels or roller (20) enabling it to be rolled into and out of the container, and various locking means to immobilise it within the container. A first locking mechanism (30) is a device pivotally mounted on the leading edge (14) and is able to rotate outwardly from the chassis and engage side walls of the container. A second locking means (40) on trailing edge (14) has a screw member which can be screwed out to engage sidewalls of the container. A third locking member (50) has an extensible member (51) to abut one or more rear doors of the container. These locking means or mechanisms maintain the pallets in a securely fixed location within the shipping containers.

WO 2004/045988 A1

## MOBILE PALLET WITH VARIOUS LOCKING MEANS

### Area of the Invention

This invention relates to the area of sea freight containers, and in particular to  
5 pallets for use inside such containers, and a locking mechanism to maintain the  
pallets in a fixed location within a sea freight container.

### Background to the Invention

It is well known for goods which are transported in sea freight containers to be loaded on pallets for ease of handling.

10 In recent times pallets have been developed of a type which are able to be rolled into and out of such a container. This mobile nature of such pallets can however cause difficulties in relation to their movement within a container when the container is either being moved for transport or, in particular, when the container is on a ship at sea.

15 Quite clearly a container which is on a ship is subject to a significant degree of movement and so are containers when they are being loaded and unloaded and being transported. Therefore any device, such as a pallet, which is inside the container and which is not securely fixed in a particular position in relation to the container is going to move. This in turn may contribute to problems associated

-2-

with damage to goods which are being transported on the pallet and, in an extreme event, to damage to the container itself.

### **Outline of the Invention**

It is an object of this invention to provide a locking means for a mobile pallet for  
5 use inside a sea freight container.

The invention is a pallet for use with a sea freight container said pallet having a chassis which is provided with locomotion means enabling it to be rolled into and out of the container and also with locking means to immobilise it within the container.

- 10 It is preferred that the locomotion means be a plurality of rollers however wheels or other appropriate means could be used. It is further preferred that the pallet have an upper surface positioned on the chassis which surface is provided with an aperture over the location of any roller such that pallets of the same size are able to be stacked one upon the other.
- 15 It is preferred also that the locking means consists of a plurality of locking means adapted to function at different locations on the chassis.

A first locking mechanism is positioned at either side of the leading edge of the pallet when it enters the container. This mechanism is a device pivotally mounted about an axial member on the chassis such that the device is generally

-3-

parallel to the container side walls as the pallet moves into or out of the container. As the leading edge of the pallet approaches the interior rear wall of the container it is able to rotate outwardly from the chassis and to engage with the side walls of the container. It is preferred that the pivotally mounted device  
5 is a roller device. It is however envisaged that any appropriate mounting could be used or any engagement means for the device.

A second locking means is associated with the trailing edge of the pallet chassis. This locking means consists of a body member on either side of the rear of the pallet, said body housing a screw member which can be screwed out to engage  
10 with a side wall of the container. It is preferred that a locking nut be provided to screw up to the body thereby preventing unlocking of this mechanism.

A third locking means is positioned generally centrally on the trailing edge of the pallet chassis. This locking means is an extensible member able to be moved into close abutment with one or more rear doors of a container and held there  
15 preferably by means of a ratchet and pawl arrangement.

In order that the invention may be more readily understood a specific embodiment of the invention will be described by way of non-limiting example with reference to the following drawings.

#### **Brief Description of the Drawing Figures**

20 Fig. 1 shows a schematic view of the pallet of this invention;

-4-

Fig. 2 is a perspective view of an embodiment of the pallet leading edge locking mechanism;

Fig. 3 is a perspective view of an embodiment of a side locking mechanism at the trailing edge of a pallet;

5 Fig. 4 is a diagrammatic representation of an embodiment of a means for locating the trailing edge of a pallet in close abutment with container doors;

#### **Description of a Preferred Embodiment of the Invention**

In a preferred embodiment of the invention (as shown in Figure 1) a pallet 10 for  
10 a sea freight container is provided which has locomotion means in the form of  
wheels or rollers 20 and locking means to retain it in a fixed relation to the  
container interior.

The pallet has an upper surface 11 positioned on the chassis 19 which surface  
is provided with an aperture 12 over the location of any roller such that pallets  
15 of the same size are able to be stacked one upon the other.

It is preferred also that the locking means consists of a plurality of locking means  
adapted to function at different locations on the chassis.

A first locking mechanism 30 (Figure 2) is positioned at either side of the leading  
edge 14 of the pallet when it enters the container. This mechanism 30 is a

-5-

device pivotally mounted about an axial member 31 mounted on the chassis of the pallet.

In this embodiment of the invention the leading edge 14 and the trailing edge 16 of the pallet are formed from a channel shaped extrusion and axial members 31  
5 are mounted adjacent corners of the leading edge of the pallet between opposing channel faces.

The locking member 30 consists of two parallel faces 32 pivotingly connected to 31 and separated by a member 34 about which a roller 33 can rotate. The arrangement is such that the device 30 is generally parallel to the container side  
10 walls 15 as the pallet moves into or out of the container. As the leading edge of the pallet approaches the interior rear wall of the container device 30 is able to rotate outwardly from the chassis and to engage with the side walls of the container.

It is preferred that the pivotally mounted device is a roller device. It is however  
15 envisaged that any appropriate mounting could be used or any engagement means for the device.

A second locking means 40 is associated with the trailing edge 16 of the pallet chassis. This locking means 40 consists of a body member 41 welded in side the trailing edge channel on either side of the rear of the pallet, said body member  
20 housing a screw member 42 which can be screwed out such that an end 43 thereof engages with a side wall of the container.

-6-

When the end 43 is engaged it is preferred that a locking screw 44 with lugs 45 be provided to screw up to the body member 41 thereby preventing unlocking of this mechanism.

A third locking means 50 is positioned generally centrally inside the channel fn  
5 the trailing edge 16 of the pallet chassis. This locking means has an extensible member 51 able to be moved into close abutment with one or more rear doors of the container.

Member 51 is welded to a rod 52 which is able to rotate through support members 58. Member 51 is positioned between and closely adjacent to twin 10 ratchets 53 and 54 engaging with pawls 55 and 56 respectively. The teeth of these pawls are offset relative to one and other to provide for fine adjustment of member 51 when it is rotated outwards from trailing edge 16.

Locking member 50 is used to positively engage the trailing edge of a pallet with the rear doors of a container. In practice one container door can be closed and 15 the member 51 is rotated out to closely abut that door, after which time the other door can be closed. The ratchet pawl arrangement can be easily released once the doors are reopened.

Locking member 30 acts to automatically locate the pallet leading edge corners inside a container. This location is not a positive locking mechanism however 20 and release is automatic when the pallet is withdrawn from the container. The

-7-

advantage of this device is that access to the interior of the container is not required to effect this release.

It is preferred that locking members 30 be used on all pallets and that either or both of locking members 40 and 50 be used to positively locate a pallet in position within a container. In particular locking member 50 can be used to fill any space left when one or more pallets are loaded into a single container.

Apart from the general requirements as to strength which would be self evident any appropriate materials can be used for the construction of the components of these locking mechanisms. In a preferred embodiment of the invention presumably these would be generally manufactured from strong metal products however the material of the rollers could be of some shock absorbing nature if that was desired.

The invention therefore provides a pallet which can be loaded and unloaded outside a sea freight container and then be rolled by a fork lift or the like into and out of such a container. The provision of the locking mechanisms used in association with the pallet means that produce of all kinds can be securely transported on the pallet without risk of damage during travel. Pallet loading can also be extremely secure in that loading and unloading can be effected outside a sea freight container.

Whilst one particular embodiment of the invention has been described herein it is to be understood that variations and modifications in the features described and the materials used can still lie within the scope of the invention.

-8-

The claims defining the invention are as follows:

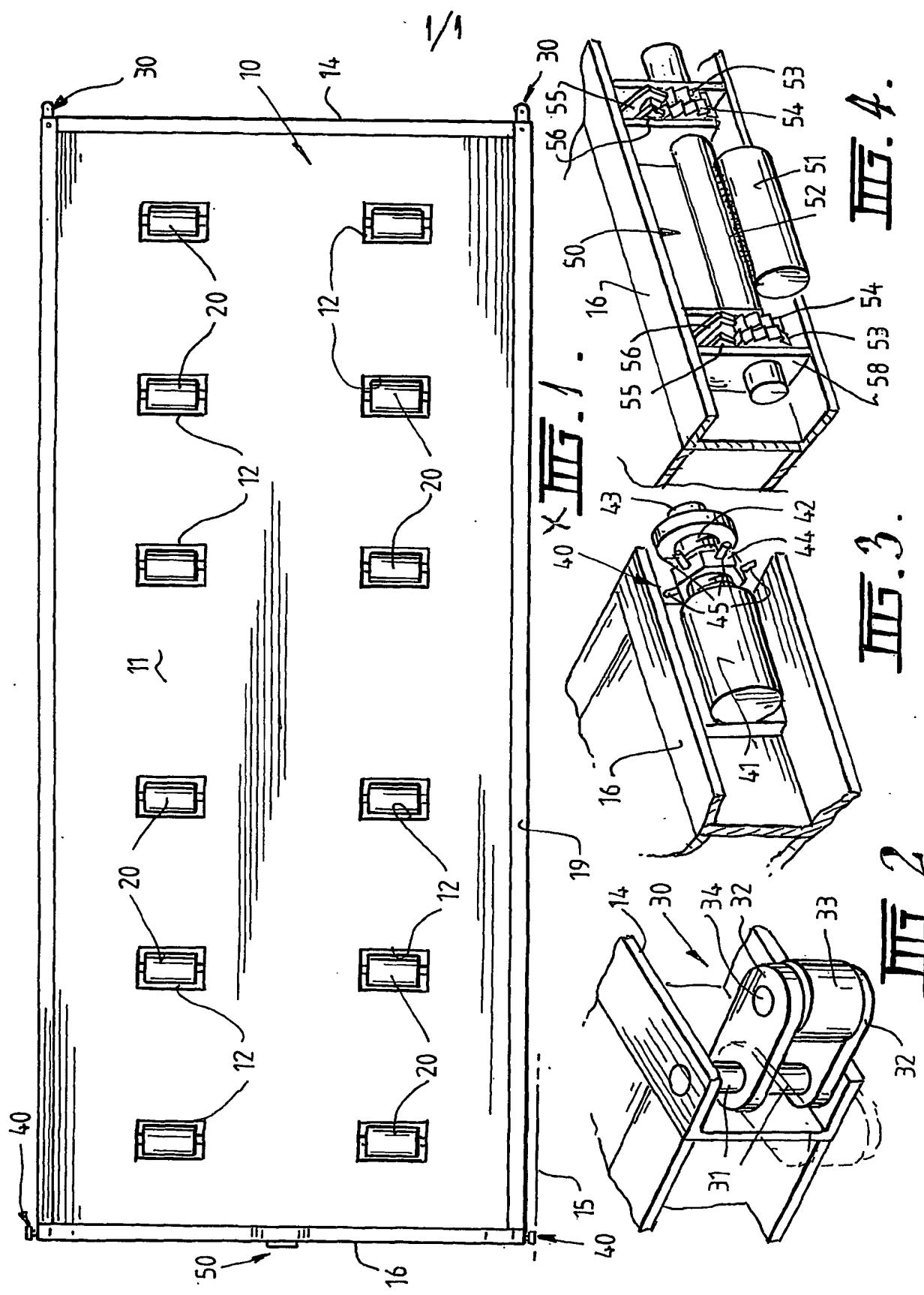
1. A pallet for use with a sea freight container said pallet having a chassis which is provided with locomotion means enabling it to be rolled into and out of the container and also with locking means to immobilise it within the container.
2. A pallet as claimed in claim 1 wherein the mobilisation means is at least one roller mounted in the chassis.
3. A pallet as claimed in claim 1 having a first locking means positioned at either side of a leading edge of the pallet when it enters the container said locking means being a first locking device pivotally mounted about an axial member on the chassis such that the device is generally parallel to the container side walls as the pallet moves into or out of the container but rotates outwardly from the chassis to engage with the side walls of the container once the device contacts an interior rear wall of the container.
4. A pallet as claimed in claim 3 wherein said first locking device includes two parallel faces pivotally connected adjacent one end to the axial member and separated a container wall engaging member.
5. A pallet as claimed in claim 4 wherein the container wall engaging member is an axial member between the parallel faces about which a roller member can rotate.

-9-

6. A pallet as claimed in any one of claims 1, 3, 4 and 5 wherein a second locking device is provided adjacent each corner of a trailing edge of the pallet which second locking device engages with a side of a container.
7. A pallet as claimed in claim 6 wherein the second locking device includes a body member welded to the trailing edge of the pallet said body member housing a screw member which can be screwed out such that an outer extremity thereof engages with a side wall of the container.
8. A pallet as claimed in claim 7 wherein the screw member is held in firm engagement with a container wall by means of a locking nut mounted on the screw member.
9. A pallet as claimed in any one of claims 1, and 3 to 8 wherein a third locking device is located generally centrally on the trailing edge of the pallet chassis said locking device having an extensible member able to be moved into close abutment with one or more rear doors of the container.
10. A pallet as claimed in claim 9 wherein the extension member is connected to a horizontal rod, said rod being able to rotate between support members located on the pallet trailing edge, said rod having at least one ratchet member adapted to engage with a pawl such that the extension member can be fixedly rotated out from the pallet trailing edge to abut at least one container door.

-10-

11. A pallet as claimed in claim 10 wherein offset twin ratchets are provided on the rod, with their corresponding pawls, closely adjacent either end of the extension member.
  
12. A pallet substantially as herein described with reference to the accompanying drawings.



# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU03/01355

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>																						
Int. Cl. 7: B65D 90/18, 19/38, 19/42																						
According to International Patent Classification (IPC) or to both national classification and IPC																						
<b>B. FIELDS SEARCHED</b>																						
Minimum documentation searched (classification system followed by classification symbols)																						
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched																						
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DWPI IPC B65D 19/-, 88/-, 90/- and keywords: PALLET, SUPPORT, BASE, CHASSIS, ROLLER, WHEEL, MOBILE, LOCOMOTION, TRANSFER, LOCK, FIX, IMMOBILISE, RATCHET, GEAR and similar terms																						
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>																						
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																				
X	WO 02/090199 A1 (BAKER) 14 November 2002 See whole document - Claim 8 in particular	1, 2, 12																				
X	US 4976365 A (SEO) 11 December 1990 See whole document	1, 2, 12																				
A	DE 3246347 A1 (PLANMARINE AG) 20 June 1984 See whole document	1-12																				
<input type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex																						
<p>* Special categories of cited documents:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">"A"</td> <td>document defining the general state of the art which is not considered to be of particular relevance</td> <td style="width: 15%;">"T"</td> <td>later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E"</td> <td>earlier application or patent but published on or after the international filing date</td> <td>"X"</td> <td>document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L"</td> <td>document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y"</td> <td>document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O"</td> <td>document referring to an oral disclosure, use, exhibition or other means</td> <td>"&amp;"</td> <td>document member of the same patent family</td> </tr> <tr> <td>"P"</td> <td>document published prior to the international filing date but later than the priority date claimed</td> <td></td> <td></td> </tr> </table>			"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family	"P"	document published prior to the international filing date but later than the priority date claimed		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention																			
"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone																			
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art																			
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family																			
"P"	document published prior to the international filing date but later than the priority date claimed																					
Date of the actual completion of the international search 28 November 2003		Date of mailing of the international search report 10 DEC 2003																				
Name and mailing address of the ISA/AU <b>AUSTRALIAN PATENT OFFICE</b> PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929		Authorized officer <i>A.G.</i> <b>ADRIANO GIACOBETTI</b> Telephone No : (02) 6283 2579																				

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/AU03/01355**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member
WO	02/090199	NONE	
US	4976365	GB	2247664
DE	3246347	EP	0111887
END OF ANNEX			